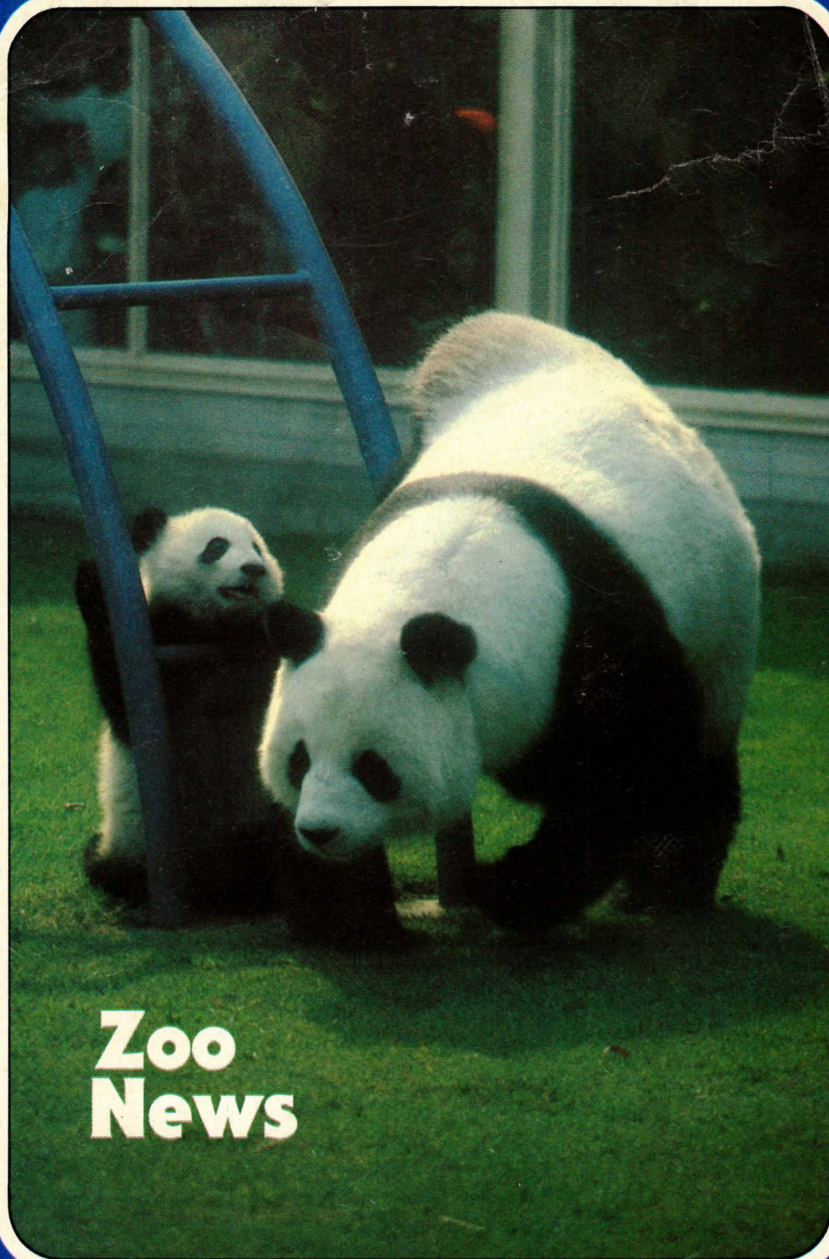


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## Fighting Fires!







## Zoo News

This playful little panda isn't just cute. He's famous, too! Along with his mother, Ying-Ying, he made history when he was born a year ago at the Mexico City zoo. He became the first baby panda ever to survive outside of China.

Powi's first year has been exciting. Thousands of people came to visit him. Big parades were held in his honor. And on July 21, he celebrated his first birthday.

To find out more about this famous panda, turn to page 24.

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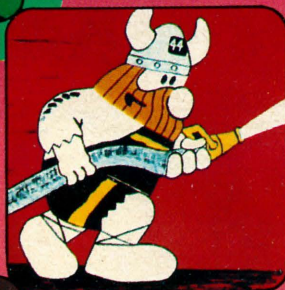
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# 24 CONTACT

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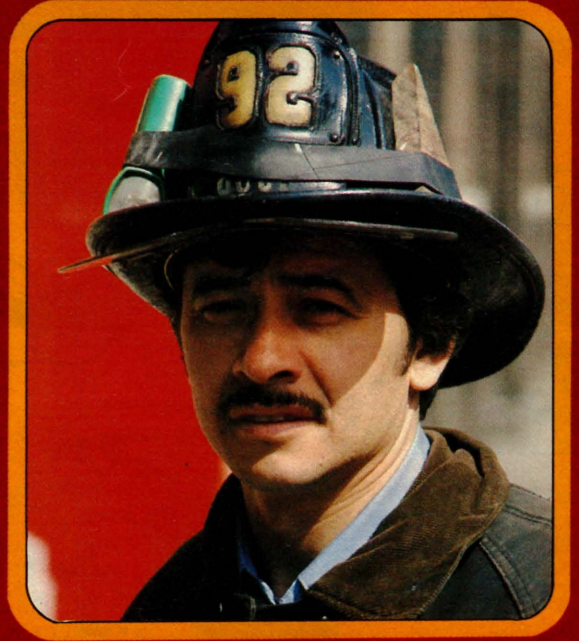
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# Where There's Smoke, There's Herbie

**MEET A FIRE  
FIGHTER**

by Mary Ann Castronovo



Fire fighters need good equipment to help them do their job. Here two firemen are riding up to the level of a fire in a little car called a cherry picker. Then they turn their hoses on the flames.



Dressed in his black helmet, coat and boots, he races by in a shiny red engine with its lights flashing and siren screeching. He is ready to tackle almost any danger. He is fire fighter Herbie “Herbie” Galarza of Engine Company 92 in New York City. Together with a team of fellow fire fighters, he saves homes, schools, stores and people from the horrors of fire.

Herbie experiences plenty of excitement and adventure. But he sees a lot of injured people and burning houses, too. Unfortunately, all fire fighting runs don’t end happily. “You see all kinds of things in this job,” says Herbie, “so you prepare yourself for the worst.” In his eight years of fighting fires, he has learned to keep calm, think quickly and act fast.

### **Responding to a Call**

When a call comes into the firehouse, Herbie and the other fire fighters immediately drop what they’re doing. They jump into their turnout gear—boots, coats and helmets—and dash to the engine and truck. The doors to the firehouse go up, and the fire fighters are on their way. Everything is done fast. There is no shouting and little talking. In an emergency, every second counts.

When fire fighters get to the fire, teamwork and good communication are what count most. Assignments are given out at the start of each working shift. Each fire fighter must know *exactly* what his or her job will be for that day.

Herbie and the other fire fighters in his engine company share their firehouse with the firemen of Ladder Company 44. Herbie’s team uses the hoses from the engine to put out the fire. The other fire fighters from the ladder truck are called *truckies*. They are the first to enter a burning building. Their job is to find out exactly where a fire is and to keep it as small as possible.

### **At the Scene**

The driver of the ladder truck parks it so that the ladder can be raised against the burning building, if necessary. Then the truckies jump out. They’re divided into the inside team and the outside team. Each group has its own special job to do.

For small fires, the inside team goes in to break down locked doors and to put out the fire with an extinguisher. If the fire is large, the outside team goes into action. The fire fighter assigned to the roof goes to the top of the building and puts a hole in the roof. That helps the heat, smoke and poisonous gases to escape.

Another member of the truckie team goes up the fire escape. He carries an ax and a long metal pole with a hooked end. First, he breaks the windows so



**Above:** Some fire fighters must cut holes in the roof of a burning building. The holes allow smoke and poisonous gases to escape. **Below:** First, firemen connect their hoses to fire hydrants. Then they direct powerful streams of water into the blazing fire.





that more smoke and heat can escape. Then, he starts to rescue people trapped on the floors above the fire.

### **Dartling the Blaze**

Meanwhile, Herbie and the rest of the engine company are hard at work. First, the driver tests the water pressure of the nearest fire hydrant. Then, he connects the engine to the hydrant. The fire fighters stretch hoses into the burning building. When the hoses are in place, the driver turns the water on. If a fire is in a tall building, he also turns on the engine's pumper to increase the pressure of the water.

The fire fighter who holds the end of the hose is the *nozzle person*. When Herbie is nozzle man, he bends down low and moves carefully in the direction of the heat. Because heat rises, his ears would burn if he stood up. When he sees a big glow, he opens the nozzle. But he doesn't point it at the fire. The water coming through the hose first pushes air out, and air feeds fire. When water finally reaches the nozzle, Herbie opens it all the way and points it at the ceiling. As he turns the hose, the water splatters everywhere, cooling off the whole room.

While Herbie and his engine teammates are hosing down the fire, the truckies pull down walls with their hooks. This keeps the fire from traveling up the walls to the next floor. At last



**Above:** Fire fighters can use the cherry picker to look for people trapped inside burning buildings. Then they try to rescue the people. **Left:** Fire fighters wear masks and carry oxygen tanks so they can breathe in the middle of thick smoke and dangerous gases



the fire is finally out! The truckies inspect the building to make sure there are no more sparks. Then the engine team drains the hoses and puts the tools back in the engine. They return to the firehouse and prepare for the next call.

## Keeping Busy

All this action is fine with Herbie because he likes to stay busy. And what he likes most of all is helping other people. That's why he became a fireman in the first place. He gets lots of chances to be helpful—even when he's not fighting fires. He has saved people who were trapped in elevators. Herbie has even delivered babies.

"Fire fighters don't turn anybody away," he explains. "We're here to help the public."

Although Herbie's job is dangerous, he doesn't think much about that part of it. Like other fire fighters, he has special equipment to keep him from getting hurt. For example, he carries a tank of air on his back. The tank is connected to a mask which allows him to breathe normally in the midst of heavy smoke. "You can't even see your hands, but at least you can breathe," says Herbie.

His coat, gloves and high boots guard Herbie from the fire and water. His leather helmet



**Above:** Herbie and his fellow fire fighters keep their fire engine clean and in good condition.

protects him from falling objects and keeps red-hot embers from going down his back.

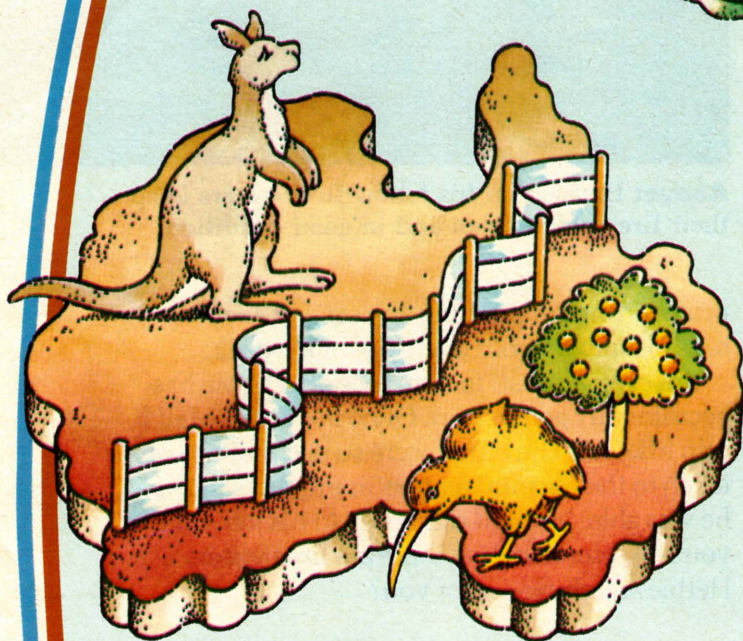
But even with all this protection, Herbie has occasionally gotten hurt. Once hot embers fell into his coat. The burns were so bad that he was taken to the hospital for treatment. But soon as he was able, he went right back to his job. Don't you feel safer knowing there are fire fighters like Herbie watching out for you?



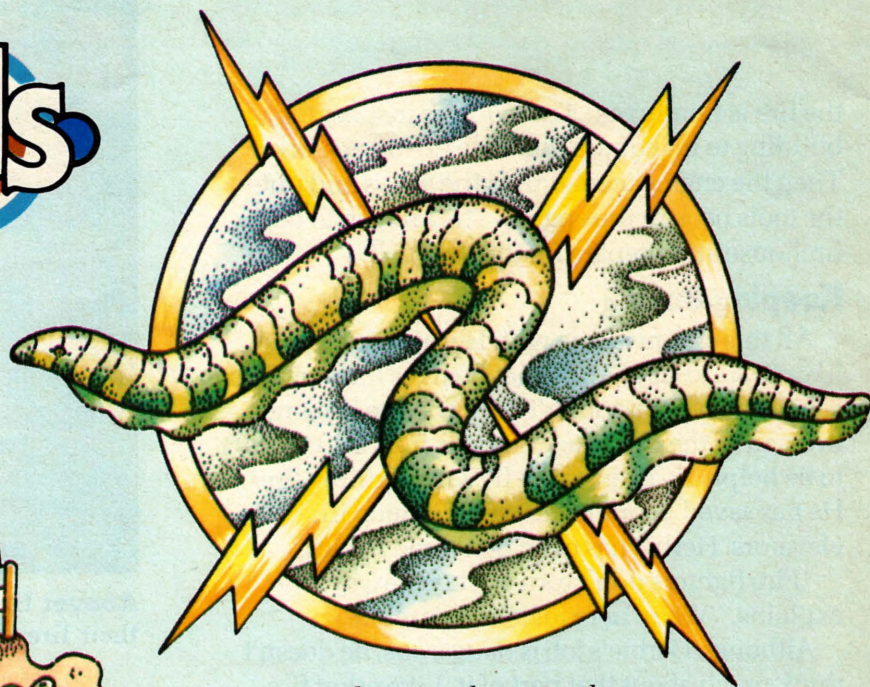
**Left:** The firehouse is like a second home for the fire fighters. Here they are cooking and eating in the kitchen. They decorated this room themselves by painting flames on the walls. The firehouse also has TV rooms, cots and lockers and a gym for exercise.



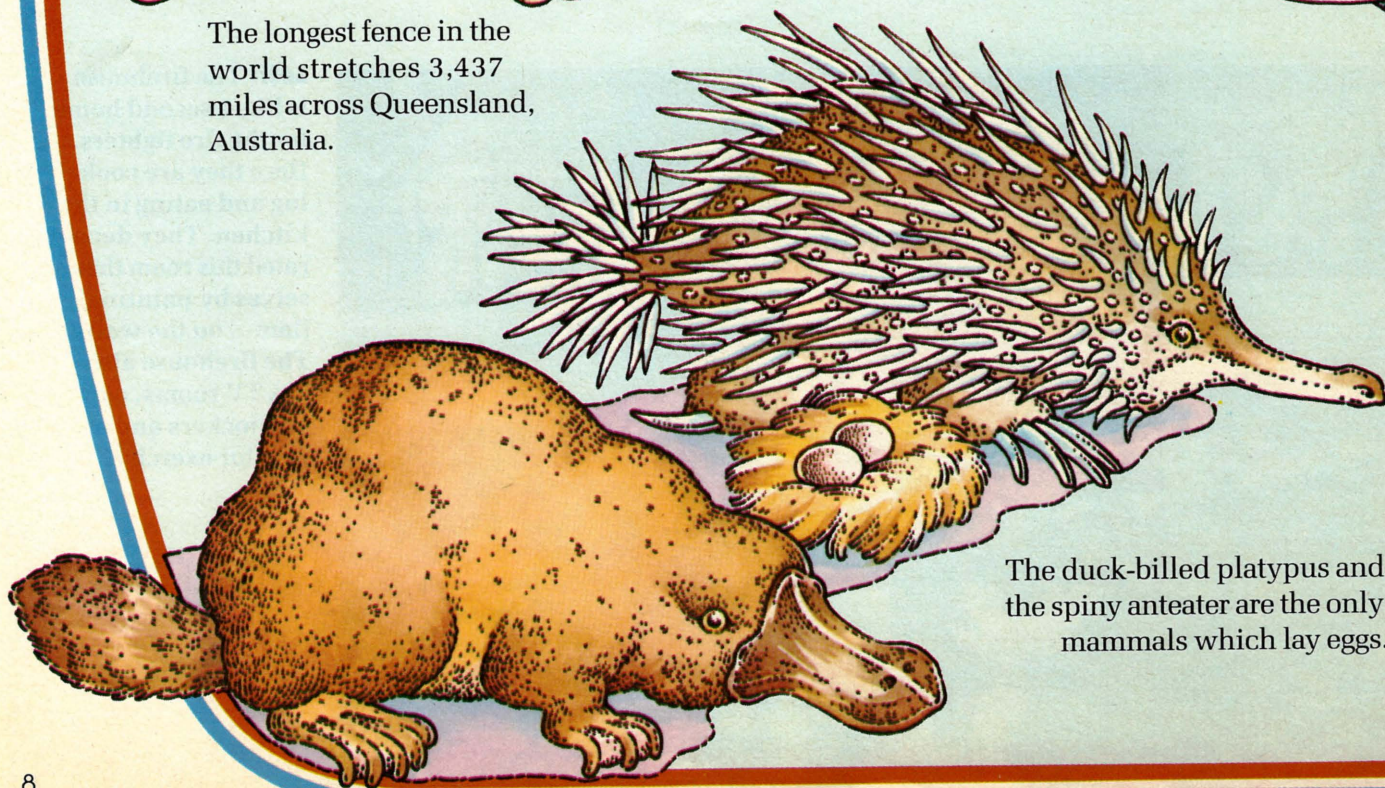
# Factoids



The longest fence in the world stretches 3,437 miles across Queensland, Australia.



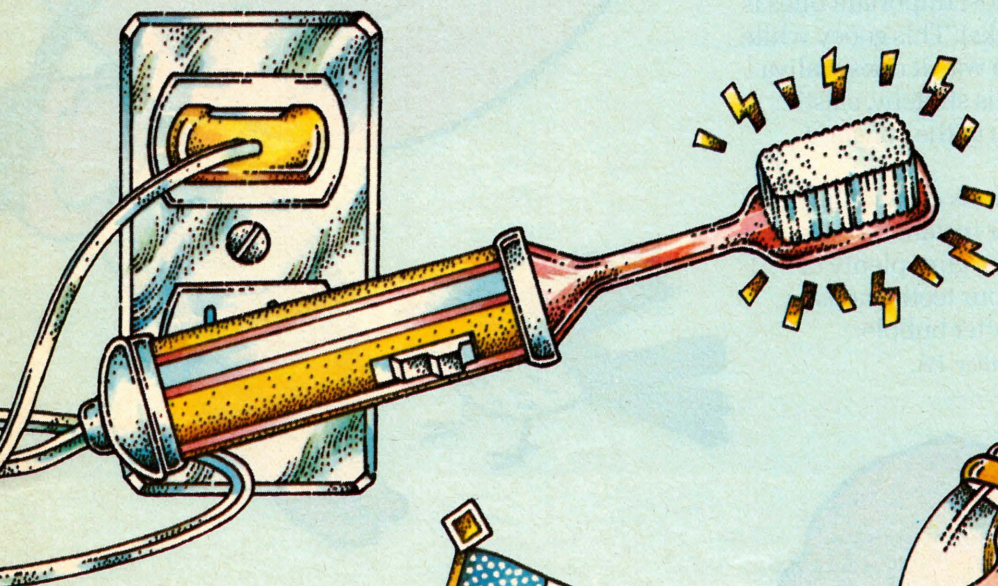
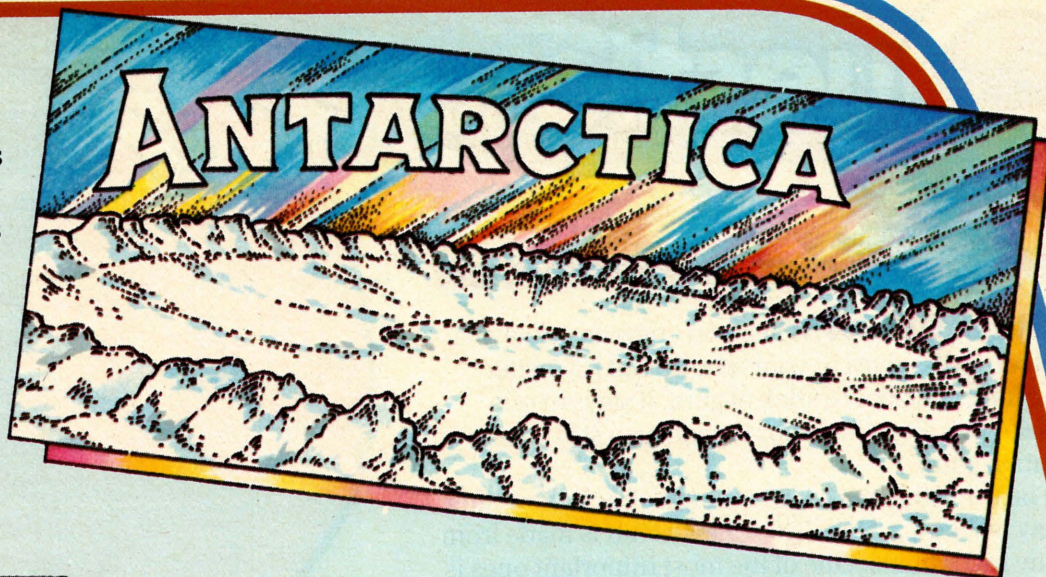
An electric eel can produce a shock that is strong enough to stun a horse.



The duck-billed platypus and the spiny anteater are the only mammals which lay eggs.

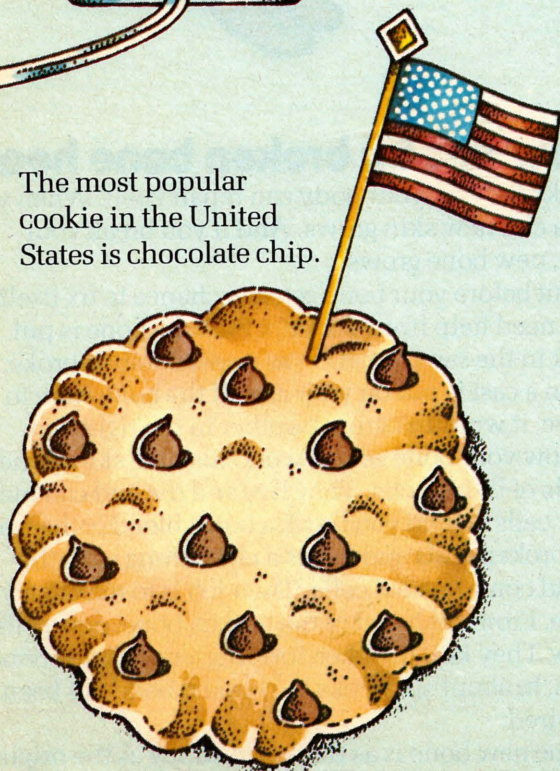


The largest crater on earth is in Wilkes Land, Antarctica. It measures 150 miles across.

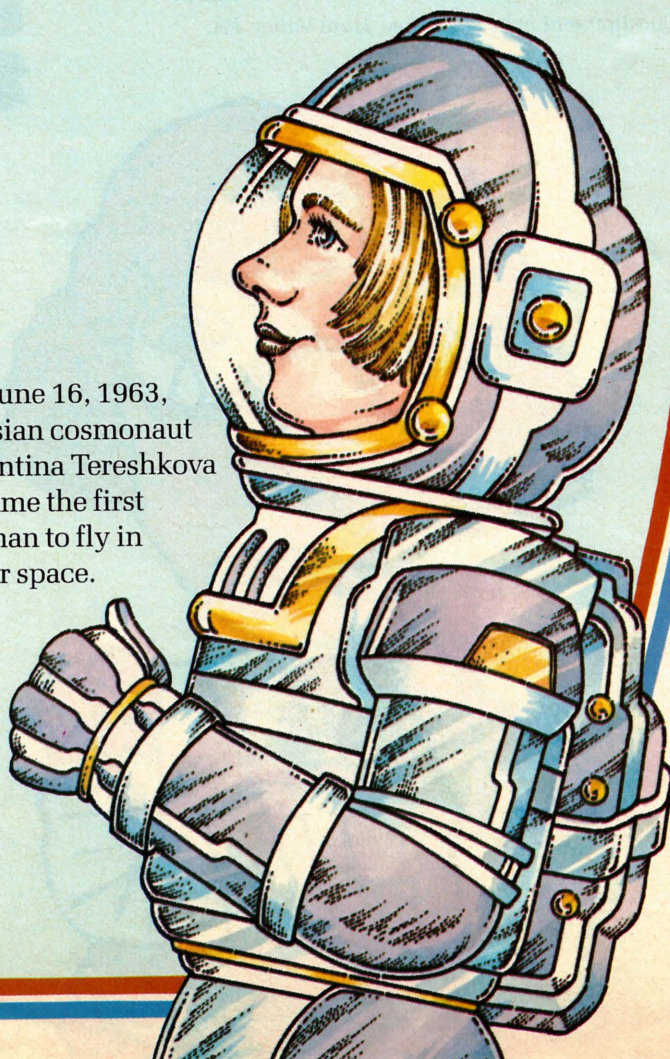


An electric toothbrush uses about 30¢ of electricity a year.

The most popular cookie in the United States is chocolate chip.



On June 16, 1963, Russian cosmonaut Valentina Tereshkova became the first woman to fly in outer space.





# Any Questions?

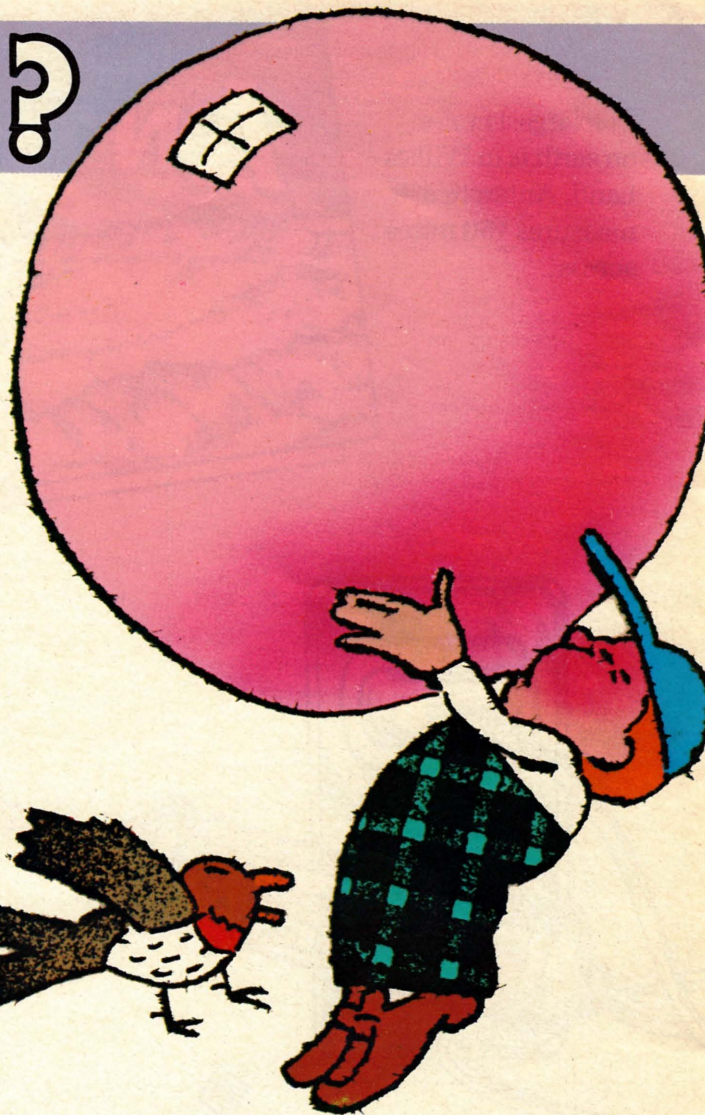
## What holds gum together when you chew it?

When you chew an apple or a pretzel, it dissolves in your mouth. But no matter how long you chew a stick of gum, it stays in one piece. Long after the flavor is gone, you still have a lump of gum.

The thing that makes gum bounce back after chew is the *gum base*. This chewy stuff is made from many ingredients. One of the most important ones is something called *latex* (LAY-tecks). This gooey white liquid causes gum to behave the way it does. Saliva won't dissolve latex. Because it is stretchy, elastic material, latex can also stand up to the constant crunching of your teeth.

How elastic your gum is depends on which kinds of latex are in it. Bubble gum, for instance, contains rubber latex. The rubber gives the gum plenty of stretch. That's why, as long as your teeth and jaw hold out, you can blow bubble after bubble.

Question sent in by Ahree Lee, Hunt Valley, PA.



## How does a broken bone heal?

Lucky for you, your body can repair itself. When you get a cut, new skin grows. And if you break your arm, new bone grows.

But before your bone gets the chance to fix itself, you need help from a doctor. First the bone is put back in the same position as it was before it broke. Then a cast is put on your arm. If the bone were to move, it wouldn't grow together in the right way.

Now your bone gets to work. Just like skin, bone is made of living cells. They live and die and can make new cells. When you break a bone, blood gathers at the broken ends and forms a clot. Along with the blood come special cells. Their job is to make new bone. From each end of the broken bone, new cells grow. They knit together, forming a net of new bone cells. In about six weeks the broken bone has been repaired.

The new bone is as thick and strong as the original bone. Your arm is as good as new.

Question sent in by Janet Siegel, Los Angeles, CA.



Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

Any Questions?  
3-2-1 CONTACT  
P.O. Box 599  
Ridgefield, NJ 07657

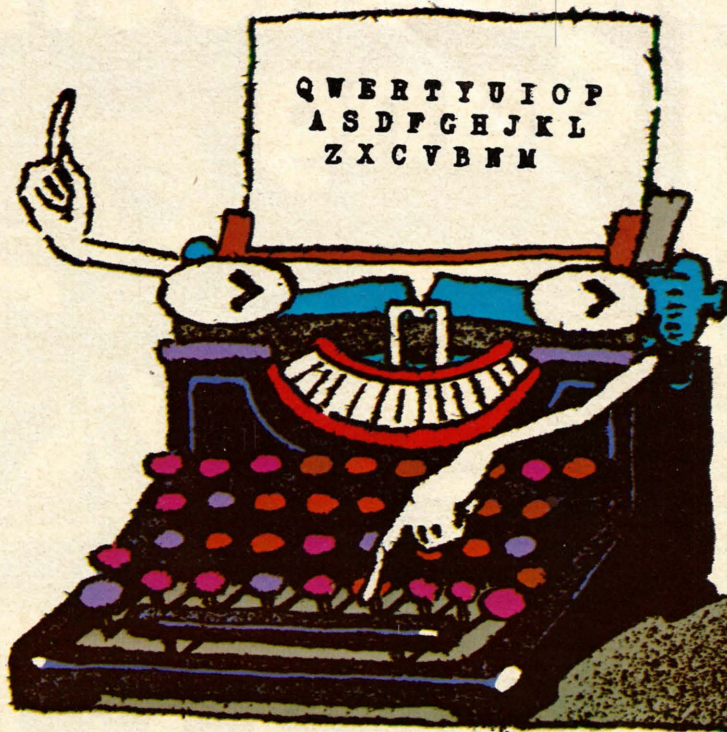
## Why aren't the letters on a typewriter in alphabetical order?

**order?** When the first typewriter was made over 100 years ago, the letters were in alphabetical order. But the bars on the machine that typed the letters kept banging into each other and getting stuck.

To solve the problem, typewriter inventor Christopher Sholes figured out which letters were used the most. Then he spread those letters out. In that way, the bars, or keys, inside the typewriter were less likely to get stuck together. The result was a typewriter with letters arranged the way you see them today.

With today's well-made typewriters, you don't have to worry about the keys getting stuck. So it's possible to make typewriters with keys that run from A to Z. But most people have learned to type with keys in the mixed-up order. So most typewriters still copy Christopher Sholes' keyboard. In fact, if you get the chance, look at the keyboard on a computer. Even these follow Sholes' pattern.

Question sent in by Juliet Garrison, Rochester, NY.



## What are the northern lights?

Imagine a natural light show in the night sky. Long, thin rays of light form lovely, wavy patterns. Some of the light rays are white as frost. Others are green or red.

In the northern half of the world, this flickering sky show is called the *northern lights*. In the southern half it's called—what else?—the *southern lights*. The source of these light shows is the sun. It sends out electrical particles. They hit the layers of air that surround the earth. Areas near the earth's poles act as magnets and attract the particles. As the little bits move along, they bump into tiny particles of air. This causes that strange glowing in the sky.

At the North Pole, people might see this sky sight every few weeks. In Canada, you might see the lights a few times a year. Even people as far south as Mexico have reported seeing the northern lights. So keep watching!

Question sent in by Jennie Ring, Dayton, OH.



# The Bloodhound Gang



## The Case of the Flaming Feather

### Part Two

by Madeline Sunshine

In last month's episode, the Bloodhound Gang had gone to visit Vikki's aunt Monica, who lived next door to The Flaming Feather Discotheque. The tenants in Monica's building wanted the disco to be closed. Adam Silver, who owned The Flaming Feather, received a threatening note warning him not to open for a planned masquerade party. The Bloodhound Gang and the tenants in the building next door decided to keep an eye on the disco that night. While they were watching, a fire broke out inside!

Vikki, Ricardo and Zack didn't have much time. The fire at The Flaming Feather was spreading quickly. A parked car blocked one emergency exit, and people were beginning to panic. Vikki stayed up front to help customers out of the building. Ricardo and Monica ran around to the other emergency exit. This one was blocked by some garbage cans. But in a moment, they had cleared the way so more people could escape.

Meanwhile, Zack ran over to the fire alarm box at the corner. He pulled the alarm, which triggered

a signal in the dispatching station. The dispatcher immediately sent a "response team" from the nearest fire station to the site indicated by the alarm box signal. Zack waited at the alarm box. Though the wait felt like an eternity, within three minutes he heard the sound of sirens approaching.

"Are you the one who sent the alarm?" a fire fighter shouted down to Zack.

"Yes," said the boy. "It's The Flaming Feather Discotheque, and from the look of things, you'll need more help."

"Thanks," said the fire fighter. "We'll radio in. You meet us at the disco."

By the time Zack got back to The Flaming Feather, the fire fighters had used their truck to push aside the car that had been blocking the emergency exit in the alley. Now, the last of the frightened customers were being led outside.

Soon, other fire fighters arrived and, amid the terror of the crowd, they finally put out the flames.

The Battalion Chief and an assistant were asking the employees as well as the costumed disco guests to remain at the scene so their statements



could be taken. The chief had also sent in a 1041 signal to the dispatcher at headquarters. This was his way of requesting that an investigation team be sent along. When the dispatcher asked why, the chief called it a Code 1—definite indication of arson. He suspected someone started the fire on purpose.

## The Arson Squad Arrives

“Which one of you is Zack?” asked a man in plainclothes as he jumped out of a nearby car.

“I am,” Zack said. “And these are the other members of the Bloodhound Gang, Vikki and Ricardo.”

“Glad to meet you,” said the man. “I’m Marshall Brady, head of the Arson Investigation Team. It looks like you people helped us save a lot of lives tonight. We’re very grateful. Tell me,” he said to the three young detectives, “what put you onto this case in the first place?”

The Bloodhound Gang told the marshall about the tenants’ meeting, the threatening letter Adam Silver had received and the plan they’d worked out to avoid trouble.

Just then, Linda, Lois and Bruce, the tenants who had been in the disco, joined the group.

“There was a big light show going on when it started,” Linda informed them. “Everyone had cleared the floor. Different color lights were flashing all over the place.”

“And that’s when I saw it,” said Bruce. “It was another kind of flash . . . a sort of white light. It seemed to bounce out and hit the drapes.”

“Right after the flash,” Lois continued, “the drapes caught fire, and the place went wild!”

“Thank you,” said the marshall. “That was very helpful.” Then he turned to Vikki, Ricardo and Zack. “The other investigators will be taking statements out here,” he said. “I’m going inside to investigate. Why don’t you three come along?”

As they were about to enter the burned-out disco, Adam Silver, its owner, ran up to them. “It’s that woman Lois,” he shouted. “She’s responsible for this. I just saw her coming out of the club.”

“She was in there with two other people who never left her side,” Vikki pointed out. “Her alibi’s airtight. But what about yours?”

“Mine? Are you crazy? Why would I torch my own place?” the man said angrily.

“It’s been known to happen,” observed Ricardo, “when there’s insurance money involved.”

“I’m not insured,” Silver said flatly. “I couldn’t afford the payments. The Flaming Feather was all I had, and now it’s gone!”

“It’s true,” Marshall Brady confirmed. “As soon as we got the Code 1, we ran a computer check. His insurance policy ran out six months ago.”

“I don’t understand it,” said Silver, almost breaking down. “Who would want to do this to me?”

“That’s what we’re going to find out,” said the marshall. He introduced the Bloodhound Gang and explained about their trouble-shooting patrol.

“I suppose I owe you and the tenants’ committee an apology,” said Silver.

“Save it,” Zack replied. “First let’s get this mess cleared up. Can you tell us who, besides Lois, did you suspect when you received the threatening letter?”

“Well, I gave some thought to my ex-manager, Robert Maxwell,” said Silver. “I fired him about two months ago. He was pretty tough, and he roughed up a couple of my customers. I was a little afraid of what he’d do when I told him to leave. He lives down at the Marina in a houseboat.”

“Good,” said Brady. “We’ll want to question him. Now what about Frank Bennett? Our computer listed him as your landlord.”

“I thought Mr. Silver was the landlord,” said Ricardo.

“No. I just lease the place,” Silver replied. “The building is owned by Bennett, and I’m not sure what to say about him. He and I had a court battle a while ago. He wanted to get rid of me and the disco. He said he didn’t like the clients it attracted. In the end, I won the case.”

“Any trouble with him since?” Vikki asked.

“Oh, the usual. He still wants me out, but my lease says I’m here to stay for another three years. That is, if I can ever rebuild.”

“Well, let’s go inside and check out the damage,” suggested Marshall Brady.

## Looking for Clues

The inside of The Flaming Feather was a mess. Tables were overturned. The floors were burned. Everything was either scorched or soaking wet. Zack, Vikki and Ricardo made a beeline for the drapes, the area where Bruce reported he’d seen the white flash. ➞



"Hmmm. Strange smell," said Vikki. "Kind of like garlic."

"Thanks, Vikki!" Zack said excitedly. Then he called the inspector. "Marshall Brady," he shouted, "I think I know what substance caused the fire."

The marshall hurried over and looked at the tattered, half-burned drape Zack was holding up.

"See this white stuff?" Zack said. "That, plus the smell, indicates to me that phosphorus was used."

"Very good," the marshall said, complimenting Zack on his line of reasoning.

"What exactly is phosphorus?" asked Ricardo.

"It's a solid, non-metallic element," Zack explained. "It's used in fireworks, in matches—it's even used in flares."

"Flares?" said Vikki. "The houseboat! Aren't all boat owners required to have flares on board to send out warnings or distress signals?"

"Yes," said the marshall. "But slow down. So far, we suspect that phosphorus is what ignited the curtain. We won't know that for sure until the drapes are checked by the lab."

"What process will you use to check?" Zack asked.

"We'll use a spectrometer," Brady replied. "It's a machine that helps us determine the chemical elements present on a piece of evidence. We will take a part of the drape with the white substance on it and put it in the machine's chamber. The machine will analyze the substance. Then it projects an electrical pattern onto a screen in the form of colors. Each chemical element has its own specific color pattern. We will compare the color we see on the screen against color samples of other elements that we have on file. When we find a matching pattern, we will know exactly what element was used to set the drapes on fire."

"How long until the lab results come in?" asked Vikki.

"No more than two or three days," the man answered. "But meanwhile, we'll be investigating possible suspects and motives."

## The Gang Investigates

"So will we," Vikki whispered to Ricardo and Zack. Then she said to Brady, "Could we continue this tomorrow? I think we three had better get some rest now."

"Sure," said the marshall. "You must be bushed. We'll be in touch first thing in the morning."

In a flash, the three detectives were off.

"The Marina?" said Zack.

"You bet!" replied Vikki. "The Marina and Robert Maxwell's boat."

"Are you sure we should do this?" Ricardo asked. "This Maxwell character sounds like bad news."

"We've dealt with bad news before," Vikki said. "Come on!"

"Maxwell?" said an old man down at the Marina. "Last one on the left." He pointed to a houseboat called the Cracker Barrel. "But he's gone."

"Thanks," said Ricardo. "We'll just go over there and wait."

It was dark on the deck of the boat, and the three detectives had to strain to look around. As they walked along the deck, they suddenly heard footsteps hurrying down the pier.

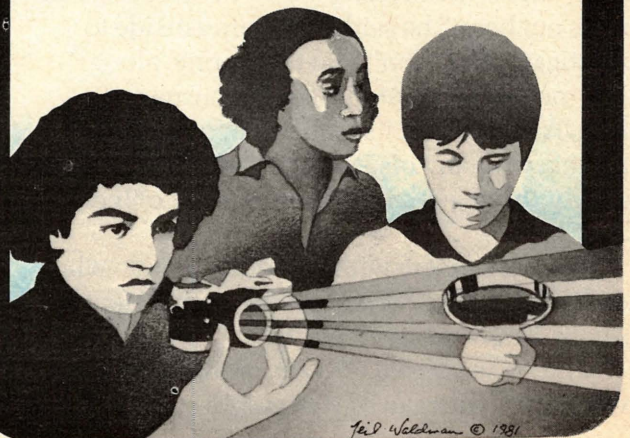
"Into the cabin," whispered Vikki. "Hurry!"

The Bloodhound Gang ducked into the cabin of the Cracker Barrel just as the heavy tread of a man's feet hit the deck.

"All right!" the man snarled. "I know you're in there. The old fisherman tipped me off. Now come out, all of you, with your hands up!"

### Is the Bloodhound Gang about to face the person who set The Flaming Feather aflame?

To find out, read part three of "The Case of The Flaming Feather" in next month's issue of 3-2-1-CONTACT.







## Word Hunt Maze

This is more than just a word hunt. It's a maze, too. Here's what you do.

1. Find all the words in the list. They're hidden across and up and down. Some are backward.
2. When all 18 fire words are circled, look at the leftover letters. They make up the paths of the maze.
3. Try to get from START to FINISH by traveling along the letters *that are not circled*.

### Word List

AX	HYDRANT
BELL	LADDER
BOOTS	OXYGEN
BURN	POLE
CAPTAIN	SIREN
ENGINE	SMOKE ALARM
FIRE CHIEF	TRUCK
FLAMES	WALKIE TALKIE
HEAT	WATER

Answers on page 37.

START

S	E	I	K	L	A	T	E	I	K	L	A	W	S
L	R	M	T	T	C	B	R	L	S	N	E	B	T
M	I	R	A	A	I	K	V	H	Q	I	P	U	O
R	J	E	E	E	I	C	Q	Y	D	A	G	R	O
A	W	D	O	H	L	U	L	D	M	T	Z	N	B
L	U	D	P	K	H	R	C	R	B	P	L	A	E
A	N	A	A	X	F	T	R	A	B	A	J	R	K
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M	O	K	D	B	N	F	W	Q	U	P	L	W	P
S	A	F	E	I	H	C	E	R	I	F	R	J	C
H	E	D	V	T	Z	R	L	M	R	B	E	L	L
E	N	G	I	N	E	L	O	P	E	N	G	I	F

FINISH



# FIGHTING FIRES!

NEW EQUIPMENT  
TO THE RESCUE







by **Carole G. Vogel and Kathryn A. Goldner**

Take a look around your home and neighborhood. What evidence can you find of concern about fire? You should see fire hydrants, extinguishers, smoke detectors—all ready and waiting.

If you could have toured your town 200 years ago, you wouldn't have seen any of this equipment. Back then, people had nothing but their eyes, ears and noses to detect fire. Once they spotted one, they had no good way to put it out. Fires often blazed out of control.

Over the years, towns began to pass fire prevention laws. Some towns organized the people into *bucket brigades*. They passed water buckets hand-to-hand from their water source to the fire. Other towns started fire-watch patrols. People walked up and down streets all night. If they spotted a fire, they rang the church bells. Everyone rushed out of bed and helped to put out the fire.

Fire prevention laws have changed since the days of bucket brigades and fire-watch patrols. Much of the equipment you'd see on a neighborhood tour is there because of these laws. You know what the equipment looks like. Here's your

chance to find out how all this useful stuff works.

### **Sniffing Out Fires**

Bleep-bwee! An ear-piercing noise jolts you out of a sound sleep. The smoke detector in your hall is blasting. What does that mean? Get out of the house fast! Smoke is often the first sign of a fire. At the first puff of smoke, nearby smoke detectors sound off. Their warning could save your life.

Does your home have smoke detectors? Look on the ceiling to find out. There should be one in the hallway outside the bedrooms. Another should be in the main living area. The larger your home, the more detectors you need.

There are two basic kinds of smoke detectors. One has a special kind of light-sensitive cell inside. It also has a beam of light shining into a small chamber. Normally, this light does not shine on the cell. However, when smoke particles get trapped in the chamber, they scatter the light. Some of it strikes the cell. When enough of the scattered light hits the cell, the alarm goes off.

An *ionization detector* works differently. Inside its chamber is a tiny bit of radioactive material. ➤



This material allows the air molecules to carry a small electric current. When smoke particles enter the chamber, they interrupt the current. The alarm goes off.

When ionization detectors first became popular, some people worried about them. They thought the radioactive material might be dangerous. Research has shown that these detectors are safe. But when it comes time to replace an ionization detector, it is important to dispose of it properly. The manufacturer's instructions must be followed *carefully*.

Are you or your parents worried about having radioactive material in your house? You can play it safe by getting a light-sensitive detector. Just be certain you have some kind of smoke detector. And be sure it is checked regularly. That way you will be sure it will work when it is needed.

## Snuffing Out Flames

Flames may leap from a wastebasket stuffed with paper. Fires can also start in a greasy frying pan or near frayed wires in your TV set. A fire will start wherever there is oxygen, something to burn and enough heat to get things going.

Fires may all look the same, but they're not.

That's important to know when you are trying to put them out. Don't pour water on a blazing frying pan, for example. Water will spread the grease and the fire. How about an electrical fire? Never use water! Electric current can travel through water. It could create a shock strong enough to kill a person.

The best way to put out a small fire is with a fire extinguisher. The oldest type of extinguisher contains a mixture of water and baking soda. Inside the top is a small container of acid. When the extinguisher is turned upside-down, the soda and acid mix. This produces gas which forces the water out through a hose.

The problem with this sort of extinguisher is that it uses water to cool off fires. That means it only can put out some fires. Now there are new extinguishers. Some are filled with powdered chemicals. Others have foam or carbon dioxide gas. These extinguishers do not cool off fires. They block the oxygen from getting to fires and smother the flames. That's why they work against any kind of fire.

The next time you are in a building that has an extinguisher, take a close look. If the label says it is





“class C,” it’s the kind that puts out all types of fires.

## Fire Hydrants Uncapped

“Rain! Rain at last!” In the past, weary fire fighters rejoiced when they felt the first drops. The rain would finish the job they couldn’t do.

Until the early 1800s, getting water to a fire was a major problem. Then cities began to place large water pipes, called *mains*, under the streets. These mains carried water from the rivers or lakes to homes and shops. They provided water for everyday use as well as for fighting fires. The first mains were made from hollowed-out logs placed end to end. Holes were cut in the tops so that fire fighters could get to the water. These holes were sealed with removable pieces of wood called *fireplugs*.

Like fireplugs, modern hydrants connect to underground water mains. But the similarity ends there. Fire hydrants are made of metal. They are easy to get to. They have valves to turn the water on and off. And they have connectors for attaching fire hoses.

In 1904, a terrible fire raged through Baltimore. Fire fighters from neighboring towns rushed in to help. But they couldn’t—their hoses didn’t fit onto

Baltimore’s hydrants! The visiting fire fighters watched helplessly as the blaze destroyed much of the city. Today hydrant connectors are of standard sizes. Fire fighters can attach their hoses to hydrants in any town.

In rural areas, fire fighters have a different problem. The houses are too far apart to use underground water mains. Instead, people get their water from deep wells. What do fire fighters do? They must carry water in tanker trucks. When that water is used up, they pump water from ponds, rivers and even cattle troughs.

## More Prevention

Fire hydrants, smoke detectors and extinguishers are just a few of the ways your community guards against fires. Many buildings have automatic alarms and sprinkler systems that douse flames. Building codes make sure that there are fire exits. New flameproof materials slow the spread of fires.

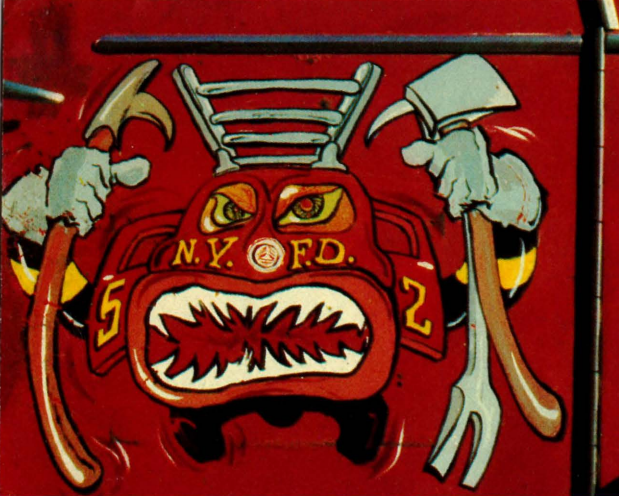
These different developments have not eliminated fires. But, combined with people who practice fire safety, they make your community a more secure place to live than ever before.





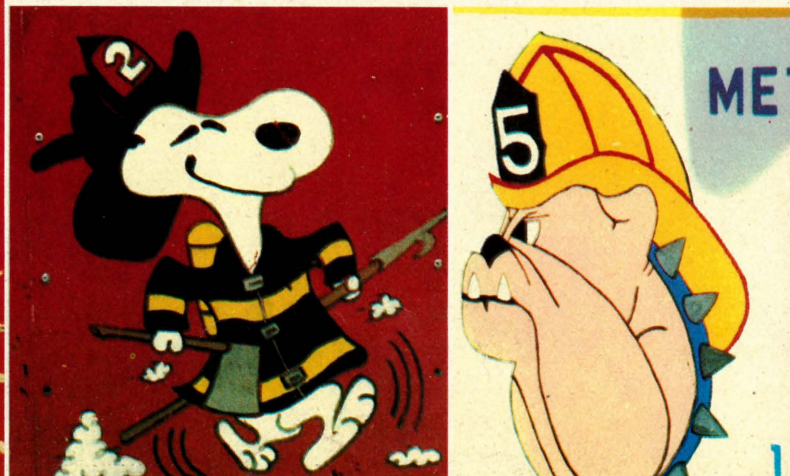
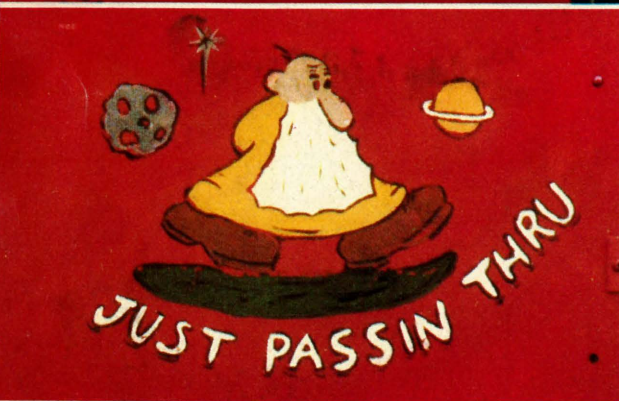






# Fire Safety Tips

1. With your family, plan and practice fire drills. Make sure there are at least two exits from your home.
2. Make sure that there is at least one smoke detector in your house and that it works.
3. Do not overload wall outlets. If you see an electrical appliance with a frayed wire, alert your parents.
4. Make sure there is air space behind TVs and on top of stereos, so that heat can escape.
5. At holiday time, use flameproof costumes and decorations.
6. In cold weather, be certain that while portable heaters are in use, they are kept away from curtains, bed spreads and other cloth.
7. Do not store paper, rags or anything you think might burn close to a source of heat.
8. Ask your parents to get a fire extinguisher. If you have one in your home, make sure it is charged properly.



Many New York City fire fighters decorate their trucks with different symbols. The pictures you see here were reproduced from their trucks.



# List of the Month

## They're All Eyes

by Edee Norman

Eyes come in all shapes and sizes. And not all of them are for seeing. Here are eight "eyes" that don't see.



**World's Biggest Eye** The last place you would expect to find an eye is in the center of a storm. But there it is, right in the middle of every hurricane. These huge storms have winds that blow 75 miles (120 km) an hour or more. But in the center is a clear, calm spot known as the eye. A typical hurricane eye measures about 15 miles (24 km) across. That's some big eye!



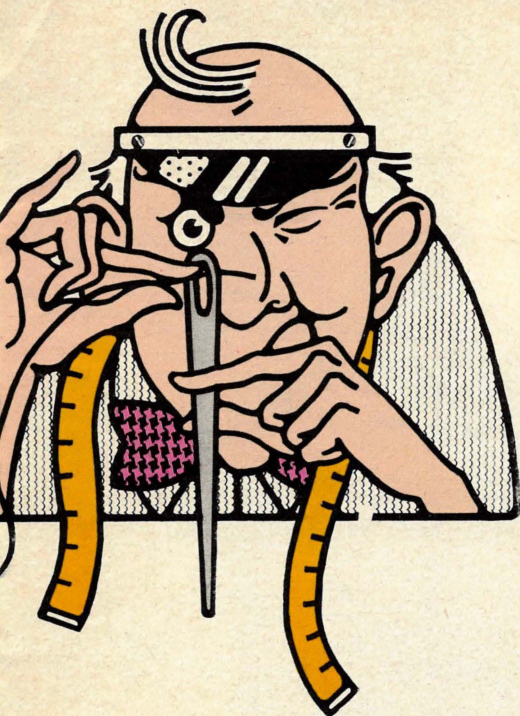
**Snake Eye** An eyecap isn't something you put on when you play in the sunshine. It is a piece of old skin that once covered a snake's eyes. As a snake grows, it sheds its skin. Shedding begins with a small crack in the skin near the snake's mouth. The crack gets larger and larger. Finally, the snake crawls away, leaving behind its old wornout skin and its eyecaps, too!



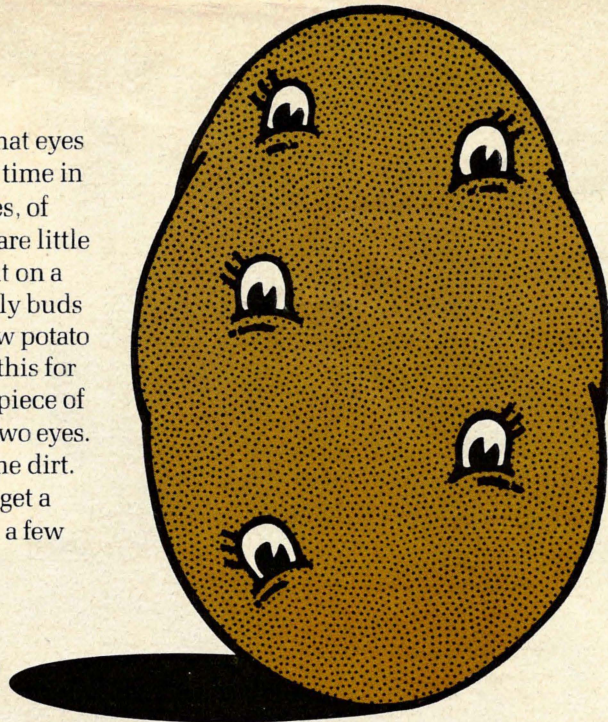
**Shoe Eyes** Right now there are probably rows of eyes on your feet. When you tie your shoes or sneakers, you put the laces through tiny holes, called eyelets.

The first eyelets were made by poking holes in leather with a sharp tool. Now most eyelets have a tiny ring made of plastic or metal. This keeps the holes from stretching out of shape.

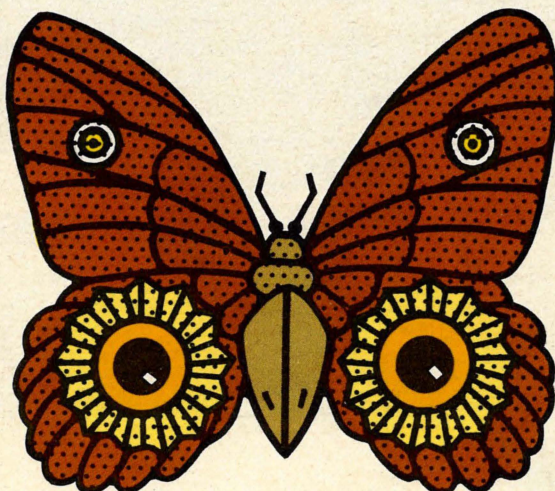




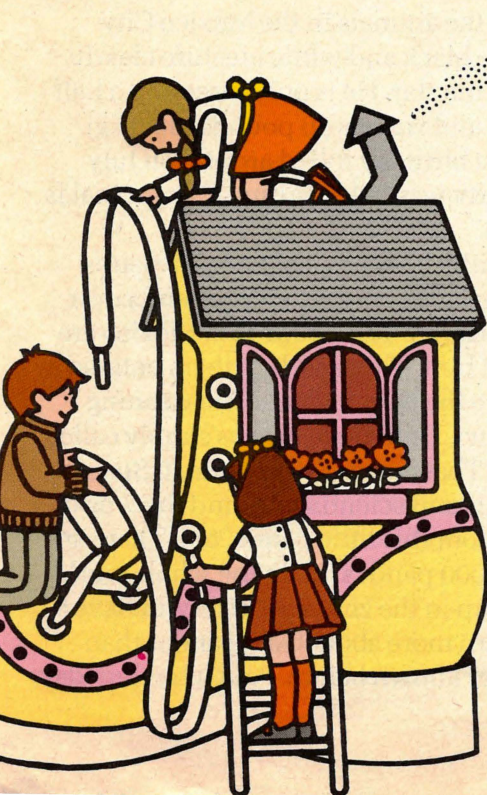
**Mr. Potato Eyes** What eyes spend most of their time in the dark? Potato eyes, of course! These eyes are little bumps that stick out on a potato. They're really buds that can produce new potato plants. Want to see this for yourself? Choose a piece of potato with at least two eyes. Then plant it in some dirt. Chances are, you'll get a new potato plant in a few weeks.



**Cats' Eyes?** When you smile, your eyeteeth are showing. They are those pointy teeth near the front of your mouth. They are also called *canines*. Some animals, like dogs and cats, use their eyeteeth to hang onto food. In fact, some of the sharpest eyeteeth ever belonged to a big cat called the saber-toothed tiger. This extinct animal had eyeteeth that were six inches (15 cm) long and sharp as daggers!



**Eye Fooled You!** The giant silkworm moth has one set of real eyes and another set of fake ones. The fakes are two dark markings on its hind wings, called eyespots. From a distance, the spots look like two huge owl eyes. When a hungry bird comes looking for a moth to eat, it sees the fake eyes. Thinking it's an owl, the bird keeps its distance. That gives the moth a chance to escape.



**The Disappearing Eye** You know that tears keep your eyes wet at all times. But there's another kind of wet eye you may not know about. It is the eye of a bog. A bog is an area of wet, spongy ground. Only in the center, or eye, is there open water. Around the eye are plants. In time, they start growing into the center of the bog. The bog's eye will get smaller and smaller, until it finally disappears.



HAMLIN





# HAPPY BIRTHDAY, EL PANDITO

by Joanna Foley

Among all the animals in the Mexico City zoo, one little black and white creature clearly stands out as the star. He is only three and a half feet (1 m) tall and weighs 80 pounds (36.3 kg). When his first birthday rolled around on July 21, a huge party was held for him. This animal is a baby panda.

The furry little fellow is a national treasure in Mexico. He is the only surviving panda ever born outside China. The children of Mexico are very proud of him. Thousands of them entered a contest to give the baby a name. The winning name was Powi. Until then, he was simply called "el pandito." That means *little panda* in Spanish.

Zoo officials and scientists around the world are excited about this little panda, too. There are fewer than 1,000 pandas left in the whole world. As he grows up in the zoo, scientists will have a chance to learn more about baby pandas than they have ever known before. And if he someday



fathers more pandas, he will play an important role in helping these rare animals to survive.

### **A Star Is Born**

At birth, Powi was a ball of white fur no bigger than a kitten. He was very small compared to his father and mother who weighed around 300 pounds (136 kg). The tiny panda wailed loudly like a human baby whenever he got hungry. He made a surprising amount of noise for such a small animal. Most of the time, he stayed close to his mother, Ying-Ying, so he could nurse. She licked him clean and hugged him close with her big paws.

Ying-Ying got some help in taking care of her baby from Dr. Juan Tellez, the zoo's head veterinarian. Along with five helpers, he kept an eye on the pandas at all times through a closed circuit TV camera. Watching the little fellow every day was fun, of course. But the real reason Dr. Tellez kept such a close watch was to protect this baby from getting hurt.

The year before, Ying-Ying had also given birth to a baby. But she accidentally smothered her first cub. That probably happened because Ying-Ying was upset. "Over 700,000 people had come to the zoo to see that little panda in the first eight days after its birth," says Dr. Tellez. "It ➡



**Above:** Like all little pandas, Powi loves to play. He has a good time climbing and romping. **Left:** Many people are eager to see "El Pandito" at Chapultepec Zoo in Mexico City.



**Right:** Even though pandas are big animals, they can climb trees easily. Here, Ying-Ying climbs over a curved metal stair while Powi plays below on the ground.



was too much excitement for the pandas.”

This time the vet was taking no chances. He kept Ying-Ying and her baby well protected. “Even the father panda, Pe Pe, was put in another section of the zoo,” he said. “We were afraid he might make Ying-Ying nervous.” The zoo also kept people away from the mother and baby for several months. All these efforts to protect Powi worked well.

As the little panda grew, Dr. Tellez began feeding him some of the same foods he gives to the big pandas. There were bits of apples and carrots. He also ate rice, spinach, beef and chicken.

El pandito was introduced to the people of Mexico when he was about six months old. There was a big parade in his honor. Thousands of people came to see him. By then, his fur had turned dark in spots like that of his parents. He was a bouncy 40-pound (18 kg) youngster who loved to romp and play. Ying-Ying sometimes nuzzled him gently. At other times she tossed him about in her big hairy arms.

Dr. Tellez felt very proud of his little star.

“We love this panda,” he said. “He is like a child to us.” The vet didn’t even mind that he once picked the baby up and got a deep scratch on his arm from Powi’s sharp claws.

Now the zoo officials are looking forward to raising more baby pandas. Whenever Ying-Ying gives birth to a new cub, they hope to turn the older baby over to his father, Pe Pe.

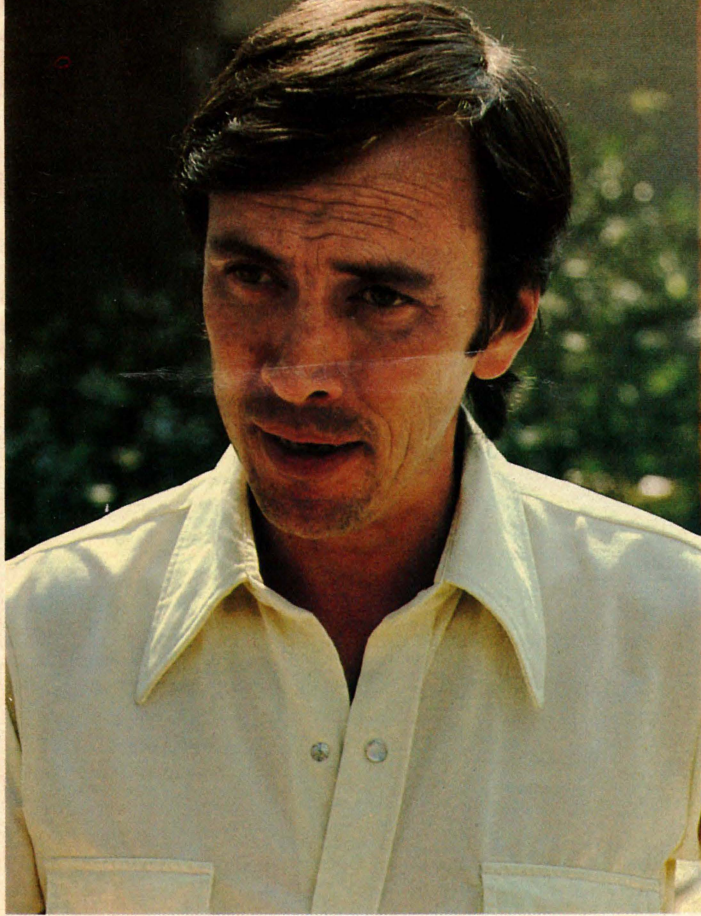
### **Panda Country**

Pe Pe and Ying-Ying are lucky to live in the Mexico City zoo. Back in 1975, when they roamed wild with other pandas in China, many of these big animals were starving to death.

Pandas eat mostly *bamboo*, a tough plant that grows in the forests and mountains. The kind they like best is *umbrella bamboo*. Unfortunately, umbrella bamboo grows in 100-year cycles. It blooms, drops its seeds and then dies. In 1975 and 1976, many of these bamboo plants died out.

That wasn’t the first time large numbers of plants had died out. But whenever that happened long ago, pandas could simply move on to





another bamboo patch nearby. Now, many bamboo forests have been cut down. In their place, people are clearing the land to build farms.

With no food available, many pandas began to starve. When the Chinese realized this, rescue teams went out to feed the animals. A few of these rescued animals were sent to zoos around the world. That's how Pe Pe (which means treasure in Chinese), and Ying-Ying (which means welcome) came to live in Mexico.

Now scientists are concerned about whether the other pandas that are left in China can survive. Some researchers have gone there to find out if pandas can learn to eat other kinds of bamboo. And from the heart of panda country in western China, they're sending back some good news. According to Neill Heath of the World Wildlife Fund, at least large numbers of pandas are no longer still dying. Now there is hope that these lovable animals will survive. ➡➡

**Left:** Dr. Juan Tellez helps Ying-Ying to take care of her little one. He decides what foods to feed Powi. Dr. Tellez is the zoo's head veterinarian.



"Powi" means little boy in the language of Mexico's Tarahumara Indians.





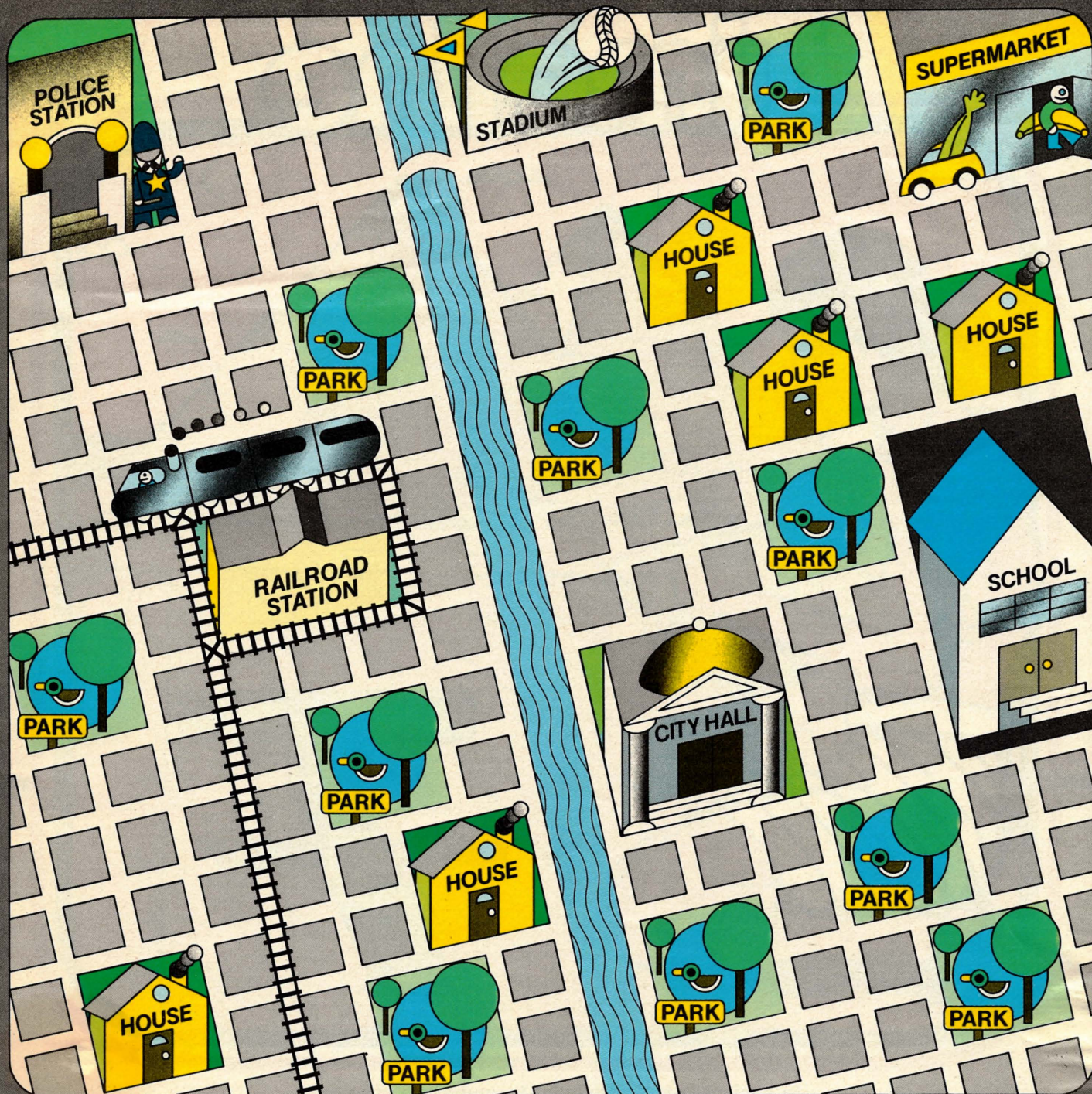
# Pandas in the Wild

**Above:** It's very cold in panda country in China's western mountains. But the big animals don't mind the snow too much because their heavy fur protects them. Their hairy feet give pandas a good grip on icy mountainsides.

**Left:** This panda is munching his favorite food—bamboo. He bites into the rough bamboo stalk with his sharp teeth and strong jaws. His six-fingered hand also helps him to eat his favorite food. The extra finger works like a thumb. Using it, a panda can peel the bamboo as he eats. These stalks are tasty, but they don't have much food value. In the wild, pandas have to eat 20 to 40 pounds (44-88 kg) of bamboo every day to stay well fed.







## MYSTERY MAP

There are 10 parks on this map. The five clues below describe only one of them. To find this Mystery Park, read the clues below in order. As you go along, cross out any park you are sure can't be the Mystery Park. At the end, the Mystery Park will be the only one left.

1. To drive from the Supermarket to the Mystery Park, you must pass a House.
2. The Mystery Park is closer to the River

than to the School.

3. To drive directly from City Hall to the Mystery Park, you must pass the Stadium.
4. To drive from the Stadium to the Mystery Park, you do not have to cross the Railroad Tracks.
5. To drive from the Police Station to the Mystery Park, you have to make only one turn.

**Answer on page 37.**



# Timeline



In ancient Egypt, people built sundials to keep time.

## The History of Clocks

by Renée Skelton

### Past

No one knows when people started using clocks to tell time. In the ruins of Egypt, a giant sundial almost 100 feet (30 m) tall has been found. Archaeologists think this early clock is 3,000 years old. Sundials were probably the world's first clocks. They continued to be popular all over the world right up until George Washington's time. Some are still used today.

Of course there are problems with sundials. You can't use them in cloudy weather or at night. So other devices, like water clocks, were soon invented. Water clocks were made of two tanks, one higher than the other. Time was measured as water slowly poured

through a small hole from the high tank to the low one.

Clocks with gears and other moving parts came later. They were built over 1,000 years ago in China. Later the idea spread to Europe, where huge weight-driven clocks with gears were made.

These clocks were powered by large stones or pieces of metal attached to ropes. As the stone or metal weight dropped it pulled the rope, making gears turn. But since they depended on big stones and long ropes, the clocks could only fit in large buildings. Plus, they only had one hand, and were not very accurate.

Finally, in the 1600s the pendulum clock became common. Each swing of a pendulum takes the same amount of time. With 60 swings each minute, this timing device made clocks much more accurate. Minutes and even seconds could finally be shown.



## Present

Today, clocks do more than just tell time. Alarm clocks ring bells and play music. Calendar clocks tell the day, month and year. Some clocks even have calculators. But the most important change made in clocks has been to make them more accurate. And that all depends on what is used as a timer.

Most clocks today run on electricity. In many of them, instead of a swinging pendulum, alternating electric current is the timer. Current flowing through the clock's wires changes direction a certain number of times each second. This vibration of current keeps the clock on time.

Even more accurate are quartz clocks. Quartz rock

crystals cut in a certain shape and size make great timers. They vibrate a certain number of times each second when electric current goes through them. The thinner the crystal, the more it vibrates. Some are so thin they vibrate *millions* of times per second.

You can buy electric clocks or quartz wristwatches. But the best timekeeper of all is not a clock you will find in your local store. It's an atomic clock. The inside of this clock is filled with fast-moving cesium atoms. They produce energy waves that vibrate more than 9 *billion times each second*. Just imagine. This clock can break a single second into more than 9,000,000,000 parts. Now, that's accurate!

# Timeline

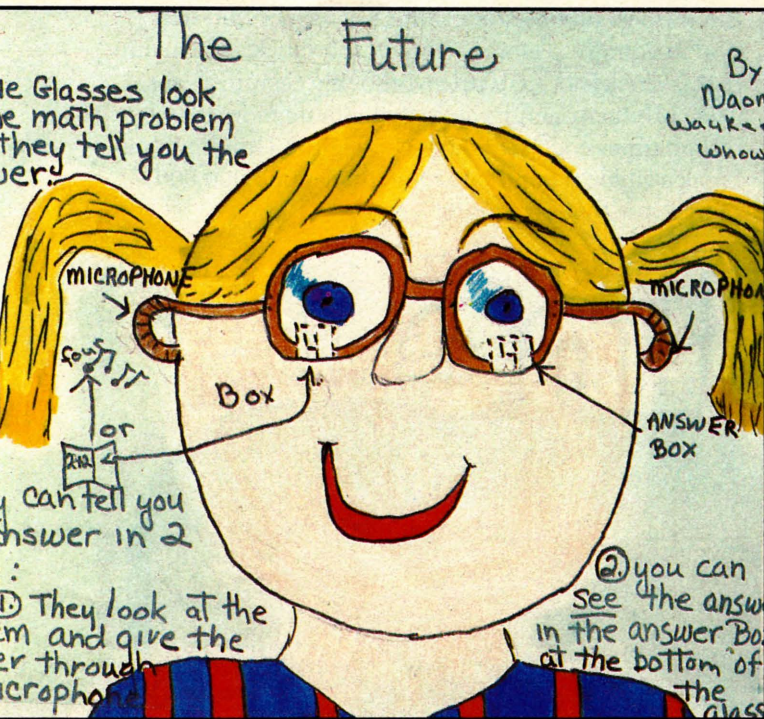


Atomic clocks like this one are today's best timekeepers.

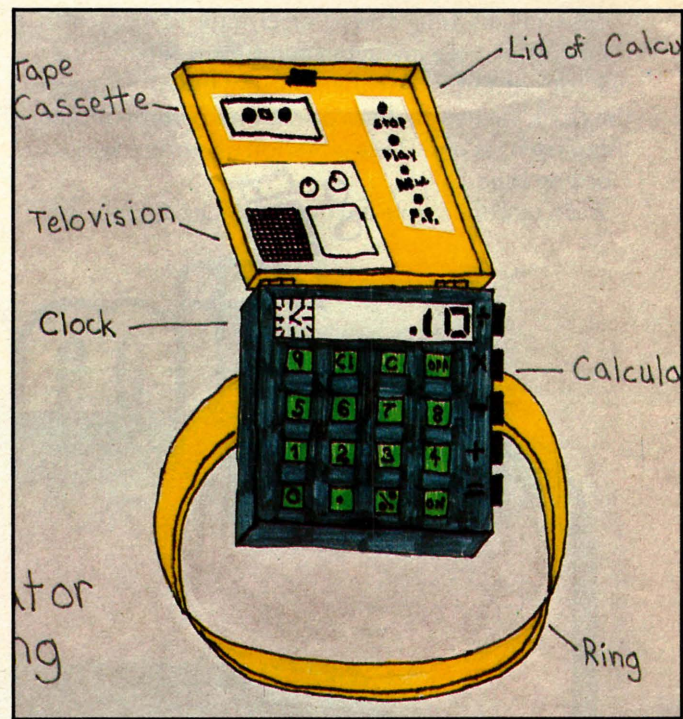


# MAIL

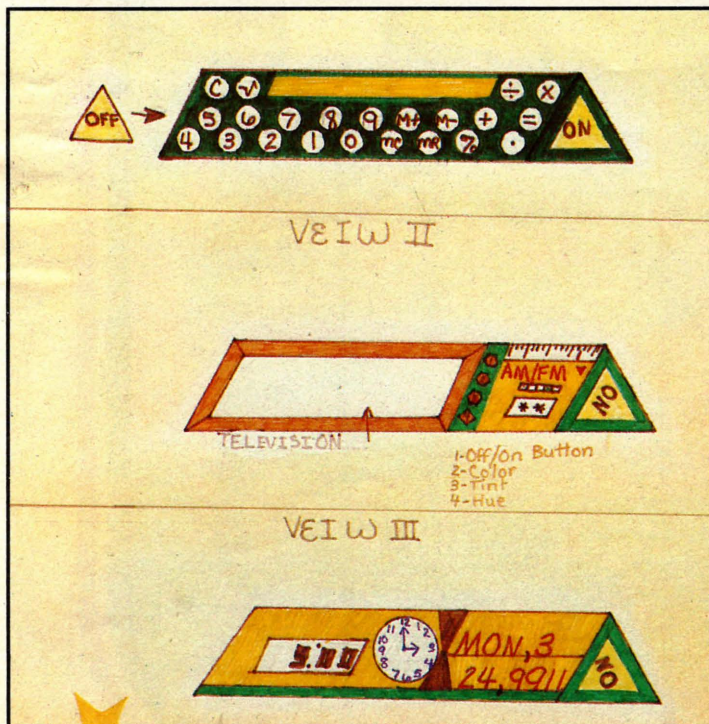
**Future Calculators!** Thanks for sending in all those great future calculators. Here are a few of our favorites:



**Naomi Whowell**, Fontana, WI. Just look at a math problem and these glasses give you the answer.



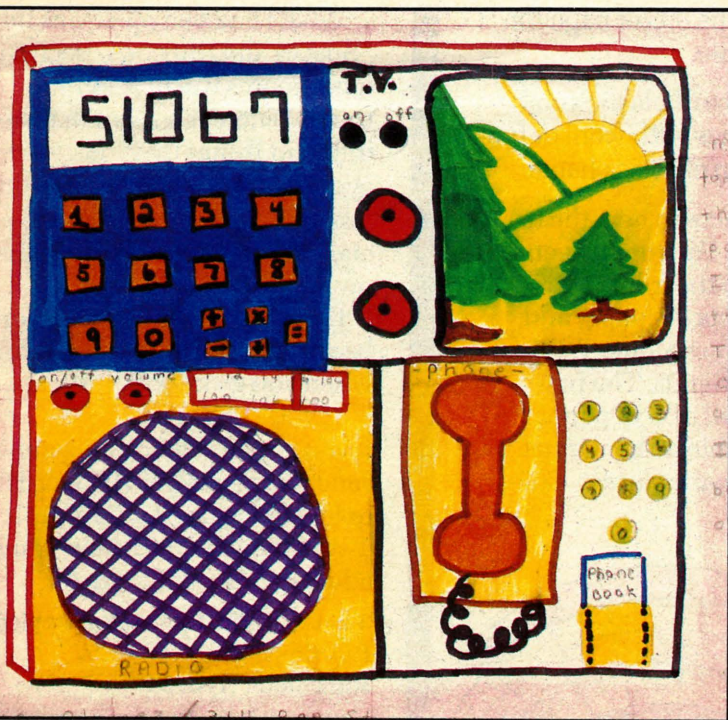
**Mark Stoltzfus**, Ages, KY. The calculator-on-a-ring is also a tape recorder and TV.



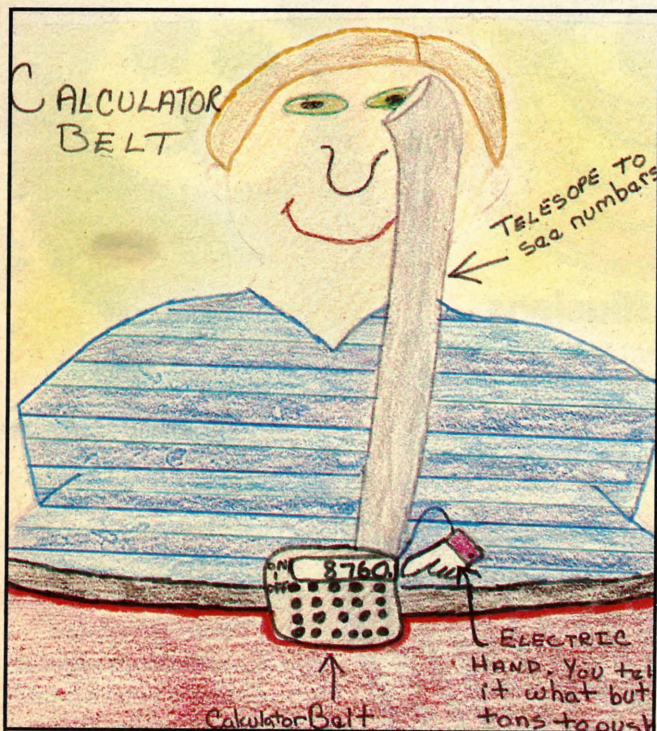
**Amy Ledgerwood**, Omak, WA. The Surprise Prism is a calculator, a television and a radio.







**Susie Alvarez**, North Andover, MA. Paper-thin and pocket-sized, this has a phone, TV and radio.



**Rebecca Turner**, Northville Township, MI. The electric hand pushes the numbers and the telescope lets you see them.

## Mystery Island II Winners

The correct answer to the Mystery Island II Contest was Tasmania. Congratulations to everyone who figured it out. Here are the names of the winners — the first six letters we picked with the right answer.

**Lara Freidenfelds**, Madison, NJ  
**Josh Rosenfeld**, Marcellus, NY  
**Paul Kerchem**, Austinburg, OH  
**Maureen Ludlam**, Wilmington, DE  
**Andrew Gilbertson**, Maplewood, MN  
**Dan Fried**, Larchmont, NY

## Timeline

### Send Us Your Future Clocks

What will the clocks of the future be like? Perhaps they will be tiny enough to fit inside your ear and whisper the time to you. Or maybe clocks will tell you the time on other planets. Use your imagination to come up with your own idea. Send us your drawing and tell us what your clock does. Include your name, address and T-shirt size. Our favorites will get T-shirts. Write to:

**Timeline: Clocks**  
**P.O. Box 599**  
**Ridgefield, NJ 07657**



Here are some books to read and things to do and see after reading this issue of 3-2-1 CONTACT.

## Fire Freebie

This month's poster gave you fire safety tips. You can play it even safer by sending for "The 9 Lives of El Gato the Cat." This free comic book is all about fire safety. El Gato shows you some fire dangers and how to avoid them in your own home. You can get this comic book by writing to:

Consumer Product  
Safety Commission  
Office of the Secretary  
Washington, D.C. 20207

## Electric Races

In *Earth Works* you read that lightning is really electricity. Here's a simple game you can play using a kind of electricity you make yourself.

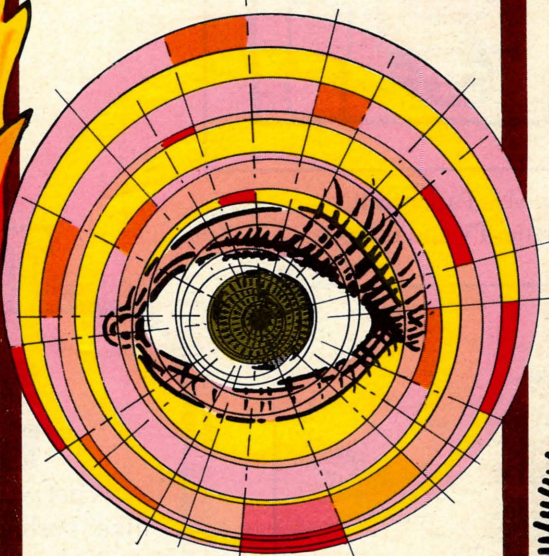
**1.** Cut one inch (2.5 cm) pieces out of folded newspaper. The fold should be on top so they stand up.

**2.** Line up the bits of paper on a smooth table.

**3.** Stroke a hard plastic comb about 50 times with wool or fur. It now has an electric charge.

**4.** Hold the comb near the front of the paper. You might even gently touch the front. The charge attracts the paper and pulls the pieces along. Try this with some friends. The first person to pull a bit of paper across the table is the winner.

On your mark. Get set. Go!



## Spaces and Illusions

This review was sent in by Melissa Hill, Stone Mountain, GA.

I went to the High Museum of Art in Atlanta, Georgia. It has art from different countries.

What I enjoyed most was the "Spaces and Illusions" section. It has rooms full of scientific things. There is a room that has different things that trick your eyes. There is another room that takes your picture with a special light that shows your shadow on the wall and floor.

I'm not going to tell you more because it would spoil your fun when you go there!

If you go to a science museum, send us a review of 100 words or less. If we use it, you'll get a T-shirt. Send your review, name, address and T-shirt size to:

3-2-1 CONTACT: Museum Review  
P.O. Box 599  
Ridgefield, NJ 07657



## Panda Books

This month you read about the first surviving baby panda born in North America. There are a lot of good books about pandas. Here are three you can look for in a library or bookstore.

A Book About Pandas When



# Previews

pandas are born they weigh only about as much as an apple. But by the time they're full-grown they weigh hundreds of pounds. This is just one of the interesting facts about pandas you'll find in this book by Ruth Belov Gross. It also has lots of great photos. The book is published by The Dial Press.

**The Giant Panda at Home** Margaret Rau's book takes you to the home of the giant panda—the mountain wilderness of western China. There you'll meet many of the animals that share the wilderness with the panda. There are loads of drawings, and even a map showing where pandas are found. Alfred A. Knopf publishes the book.



**Pandas Live Here** In this book by Irmengarde Eberle you'll learn about the daily lives of pandas. You'll also find out how these strange animals were first discovered many years ago in the Chinese bamboo forests. *Pandas Live Here* is published by Doubleday.



## 3-2-1 Contest

In Any Questions? you learned why some kinds of gum are good for blowing bubbles. Well, bubble gum is fun. But wouldn't it be great if someone invented a gum that was really special? Like gum that kept changing flavor while you chewed it. Or gum that makes bubbles that float up into the sky.

We want you to come up with a special, new kind of gum. Make a drawing of your new gum and tell us what's so special about it. Our favorites will get T-shirts.

Send your drawing, name, address and T-shirt size to:

3-2-1 Contest: Gum Gimmicks  
P.O. Box 599  
Ridgefield, NJ 07657

## Yummy Yogurt Pops

Here's an idea for a cool summer treat that is fun to make and good to eat.

1. Get a cup of your favorite kind of yogurt. Stir it up.
2. Pour it into a paper cup.
3. Place a wooden popsicle stick in the center.
4. Freeze the whole thing over night.
5. Peel off the paper cup and you've got a frozen pop!

Make as many as you want. You might even try adding granola, nuts or mini chocolate chips to the yogurt before freezing. Or, use your imagination to come up with your own crazy flavor.





# Experiment

## Sands of Time

In *Timeline* you read about the history of clocks. Now, try your hand at making a similar timer yourself. The hourglass is one of the oldest and most useful timekeepers. Here's how to build your own small version of an hourglass.

### What You Need

2 small jars with caps (same size)

a hammer

glue

a nail

sand or salt

### What You Do

1. Wash and dry the two jars.
2. With the hammer and nail, *carefully* punch holes in the center of both jar caps. Try to make the holes at the same spot on each cap.
3. Glue both caps together so the tops are touching and the holes line up. Let dry.
4. Fill one jar almost to the top with sand or salt.
5. Screw both jars onto the caps. You've got a timer.
6. Using a clock with a second hand, see how long it takes for the sand or salt to run from one jar to another.
7. Add or take away sand or salt until the timer measures the amount of time you want.

### Using Your Timer

Timers are good for lots of things. People often use them to keep track of how long something is cooking in the kitchen. You might use yours to time yourself while doing puzzles. See if you can finish a difficult maze with your friends before the sand or salt runs out. When you play a game with your friends, use your timer to make sure that everyone gets an equal turn.

You might even try making different size timers for different lengths of time. Or measure different lengths of time by changing the amount of sand or salt. Carefully mark each length of time with a piece of tape on the side of the jar. You can then use your timer to measure many different amounts of time.





## START



## Credits

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## A hand-drawn map of a city grid. The grid is composed of squares. A river flows vertically through the center of the map. A bridge crosses the river in the lower-left quadrant. In the upper-left quadrant, a park area is circled in black. The map includes various landmarks: a school with a flag on top, a church with a steeple, a large house with a chimney, and several smaller parks labeled 'PARK'. The drawing is done in a simple, sketchy style with black outlines on a light background.



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## Earthfacts: Lightning

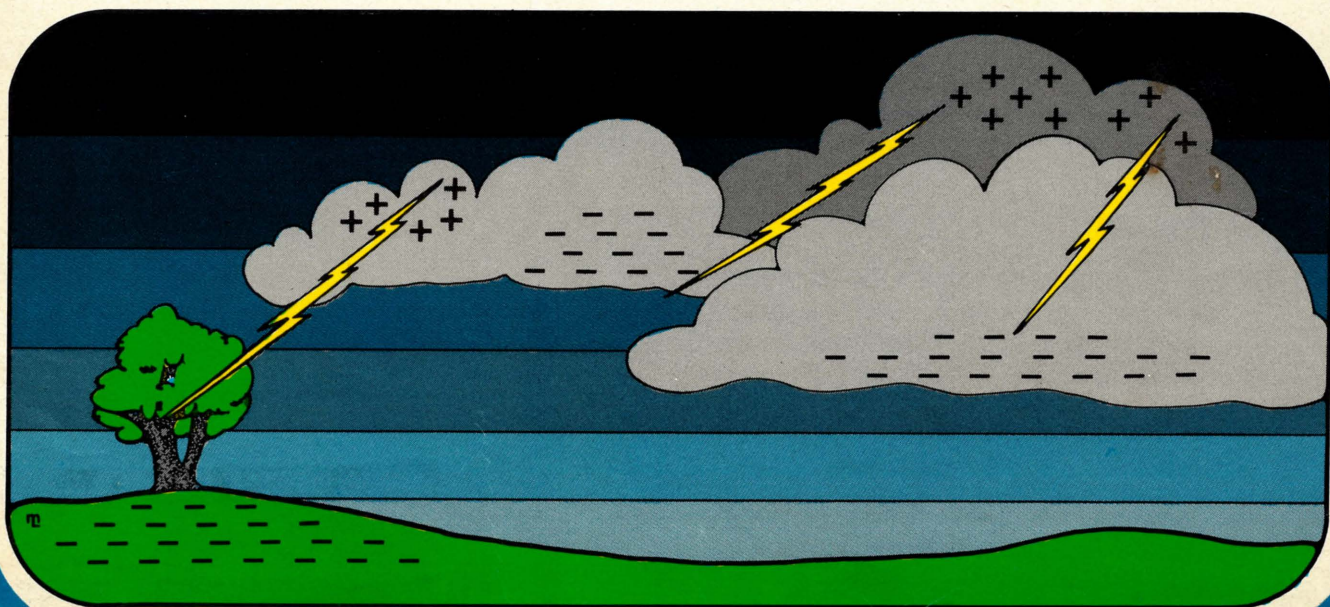
by Judy Casulli

Each month CONTACT will bring you another Earth Works. Save these pages in a notebook. Soon you will have your own guide to the wonders of the planet earth.

# EarthWorks

- ⊗ A streak of lightning may be as long as eight or ten miles (13-16 km).
- ⊗ The temperature of a lightning bolt can be as hot as 50,000° F (27,760° C). That's five times hotter than the temperature on the surface of the sun!
- ⊗ Thunder is caused by the heat of a flash of lightning. The air around the lightning bolt gets so hot that it expands and pushes outward. This happens so quickly that a sound wave is produced. That's why you hear the sound of thunder.
- ⊗ At any moment, about 1,800 thunderstorms are going on around the world. With all those thunderstorms, it is estimated that lightning strikes the earth 100 times a second!
- ⊗ When Benjamin Franklin flew his kite in that famous experiment, he proved that lightning is really electricity. Since then a lot has been learned about how lightning forms.
- ⊗ All storm clouds have electric charges. Sometimes a cloud builds up a positive charge. At other times, a cloud's charge is negative. If one cloud comes near another one with the opposite charge, a huge spark flows between them. That electric flow is lightning. It is a little like what happens when you touch something and get an electric shock. Electrons are flowing from the negative charge to the positive one.
- ⊗ The earth also builds up electric charges. When a charged cloud comes near the earth's surface, a similar flow of electrons takes place. A flash of lightning rushes toward the ground.
- ⊗ Lightning rods are used on buildings as protection. These pointed, metal rods are placed at the highest part of the roof so that lightning will strike them. The electric charge passes down the rod and into the ground. This way, the electric charge goes around the building, and not through it.
- ⊗ Lightning isn't *all* bad. The energy given off by each flash causes two gases in the air, nitrogen and oxygen, to combine. Plants need nitrogen to grow. But they can use it only when it is joined with oxygen. Over 100 million tons of usable nitrogen are spread over the earth each year, thanks to lightning.

**Below:** During a storm, positive and negative charges build up. Lightning is the flow of electricity between these charges. It can flow from cloud to cloud or from cloud to ground.







**EarthWorks**

## Lightning

Lightning is a dazzling light show that appears in the sky during storms. Its fiery flashes seem a bit scary to some people. But lightning is also beautiful. If you watch closely, you may see different kinds. *Forked lightning* is a chain of light that zigzags across the sky. *Sheet lightning* has no shape but spreads over the clouds in a bright glow. But most spectacular is a round fireball that shoots from some thunderclouds. It is called *ball lightning*.

For more flashy facts about lightning, turn to page 39.

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